

USAWC STRATEGY RESEARCH PAPER

DEFENSE PROCUREMENT STRATEGY FOR A GLOBALIZED INDUSTRY

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## ABSTRACT

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Policies affecting the U.S. defense industrial base are a series of ad hoc requirements that are often contradictory in nature. A globalized industry is more competitive, cost efficient and helps to build alliances and promote interoperability. However, the international nature of this industry produces vulnerabilities to foreign influence, reduced U.S. industrial capacity, unintended technology transfer and is subject to "buy American" laws and export restrictions. This paper presents an examination of the strategic issues raised by defense industrial base policy and recommends an overarching strategy that promotes the benefits of globalization while safeguarding national security concerns.



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## DEFENSE PROCUREMENT STRATEGY FOR A GLOBALIZED INDUSTRY

The issue of how the U.S. military procures equipment to carry out its mission as an element of national power is a contentious one. Congress, the business community, and the DoD have wrestled with defining policy in respect to the defense industry as a free market. In general, the Congress wants all government purchasers, including the Department of Defense, to “buy American,” while the DoD and defense industry have generally preferred free trade as the best avenue for procurement. The Aerospace Industries Association, one of several business-affiliated agencies keenly lobbying Congress on the issue, summed up the sentiments of many in the industry by stating:

The United States lacks a coherent, consistent industrial strategy that balances the need for critical domestic research and development and production capabilities with unfettered access to technology, regardless of origin, and the promotion of American global competitiveness.<sup>1</sup>

The U.S. defense industrial base (DIB) has changed and evolved since the cold war and will likely change more with the latest military transformation. The debate on outdated procurement policies and future strategies is likely to escalate in the face of increased equipment modernization and transformation efforts. Policy and planning officials stated the 2005 Quadrennial Defense Review could “...shake up the portfolio of weapons and technology the military needs....”<sup>2</sup> A *DefenseNews* editorial concluded:

The transformation relies on the replacement of equipment bought during the Regan era, but not on a one for one basis.... As the Pentagon shops for new equipment and software that connects it, its leaders should look both outside the United States and outside the traditional defense industry. No one has a monopoly on good ideas.<sup>3</sup>

Current U.S. DIB policy is a consolidation of incremental policy changes that are often contradictory in their aims. Buy American laws and cold-war era export controls inhibit international trade while the National Security Strategy seeks to open markets and increase military cooperation. The National Defense Industrial Association (NDIA) summarizes the observations of many international companies by stating that existing legislation and regulations “...fail to address the many new military, economic and political challenges that currently confront the United States,” and advocates a comprehensive review of policy.<sup>4</sup> As the U.S. shifts to a capabilities-based military strategy, policy makers should take this opportunity to analyze and formulate coherent policy to set the path to the future. The U.S. should overhaul ad hoc legislation and

develop a coordinated vision and strategy for the industrial base to support this transformation. This paper will review the issues surrounding the globalization of the defense industry and suggest a policy framework for the Department of Defense that balances free market competition, national security and “buy American” politics.

## **GLOBALIZATION AND INDUSTRY TRENDS**

In a report to Congress, the Defense Science Board Task Force on Globalization and Security described globalization as the “...integration of political, economic and cultural activities of geographically or nationally separated peoples.”<sup>5</sup> In terms of the emerging industrial base, the Deputy Under Secretary of Defense for Industrial Policy (DUSD(IP)) labeled it as “...a broader, less defense-intensive industrial base that is becoming increasingly international in character.”<sup>6</sup>

Martin Wolf, in the book *Why Globalization Works*, says “The bottom line then is that liberal trade is beneficial. The obstacles to it, largely created by governments, need to be reduced.”<sup>7</sup> In his discussion on the globalization aspects of free trade, he lists three advantages for open markets. First, trade produces economies of scale and comparative advantage. Specialization is good for all countries so that each may make the products they make best, then export them to other countries and in return import their specialized goods. Both countries gain in productivity in such a situation. Japan in the mid 1800s had cheap tea and silk, but very expensive wood and cotton products. By opening up trade, the world market benefited from cheaper silk and tea, while Japan enjoyed cheaper wood and cotton products.<sup>8</sup>

The second advantage according to Wolf is that free trade fosters competition and improves productivity. In the process of conducting trade, industry can import technology that further enhances domestic productivity. India for example, did not allow imports of machinery that would increase productivity. Their growth in manufacturing was low and they operated far below the productivity levels of the leading economies. After reversing that policy, growth and productivity accelerated in India. Additionally, Wolf asserts that in comparing global living standards of the 1990s to those of the 1960s, there is not one example of a country with closed markets that improved its position in world standards rankings.<sup>9</sup>

A third benefit to globalization is that it has helped democratization. Dictatorship countries, such as China, Taiwan and South Korea, opened their markets have become stable and vibrant economies, according to Wolf.<sup>10</sup> By contrast, some historians argue

that the isolation of economies during the Great Depression exacerbated tendencies that pushed the world into a global conflict at the end of the 1930s. Columnist and author Thomas Freidman best summed up the phenomena of globalization by saying that like it or not, for better or worse, globalization is the dominant international system and is here to stay. People should learn how to make the best of it while preparing for the worst.<sup>11</sup>

In response to globalization, all U.S. industry has changed since WWII. In an article in the U.S. Army War College periodical *Parameters*, Nader Elhefnawy asserts that geography offers less of an advantage today in terms of isolating the nation from its enemies. He also states that the U.S. has a greater reliance on imported natural resources.<sup>12</sup> A review of some key resources drives home the point. Imports of aluminum rose five fold over just the last twenty years and energy imports increased six-fold since the 1960s.<sup>13</sup> Furthermore, trends in the commercial sector of industry have an growing influence on the defense industrial base according to a study from the Center for Science and International Affairs. Decreased defense contracts, reduced federal R&D, a faster pace of innovation in the commercial sector, and the convergence of military and commercial technologies are major factors in the integration of all sectors of industry including the defense industrial base.<sup>14</sup> The Under Secretary of Defense for Acquisition and Technology summarized the effect on the DoD as both a fundamental change in the composition of the defense industrial base, and a reshaped military-technological environment in which the nation must compete.<sup>15</sup>

Transatlantic arms cooperation has evolved over the years and illustrates the changes in the defense industry. According to the European Union Institute for Security Studies, the west focused on rebuilding industry during the early post-war years. Then in the 1950s and 1960s, licensing agreements became the norm, and during the 1970s, co-production agreements began to emerge to help balance trade. During the 1980's and 1990's government-to-government cooperation set the standard in order to ensure NATO interoperability. Since the turn of the century, the emerging trend is corporation-to-corporation cooperation to gain efficiencies and increase access to foreign markets.<sup>16</sup> Joint ventures and foreign mergers, the product of a competitive global environment, are typical in the defense sector now and have changed the face of the U.S. defense industrial base. This compelling market phenomenon is too significant and influential to change or ignore. It must be factored into U.S. defense strategy as part of the world operating environment.

## GLOBALIZATION COSTS AND BENEFITS ANALYSIS

A review of the pros and cons of industry trends is critical in formulating a sound DIB policy with respect to globalization. Advocates of the Buy American Act (BAA) point out the jobs, industry and tax base saved by the act as well as the security of having an indigenous capability to meet our defense needs as justification. Proponents of free trade policies, including the DoD and the defense industry itself, are quick to point out that the entrepreneurial approach to developing military capabilities provides cost efficiencies, allied interoperability, and collaborative research and development.<sup>17</sup> Examining eight key issues at the heart of an open defense market, especially with respect to the impact on economics and security, illustrate the opportunities and threats for the DoD.

### U.S. INDUSTRIAL CAPACITY

The most obvious benefit to buying American is to keep vital industrial assets and manufacturing capability in the United States. "A healthy infrastructure makes it clear to adversaries that the United States can rapidly respond to any emerging threats with new forces and capabilities," stated the Institute for National Strategic Studies in their 1999 Strategic Assessment.<sup>18</sup> Advocates for domestic production argue that the U.S. ability to respond to future threats requiring the mobilization of industry will not be available to defense planners if products are increasingly manufactured overseas. During World War II, the United States mobilized industry to build 296,000 aircraft, 1,201 ships, 64,546 landing craft, 86,333 tanks and 41.585 billion rounds of small arms ammunition over a 44 month period.<sup>19</sup> Buy American advocates point to WWII industrial mobilization as a precedent and argue that the U.S. defense industrial base cannot be allowed to wither. They state that manufacturing in 2001 provided only 14 percent of the gross domestic product versus 27 percent immediately following World War II – down nearly half.<sup>20</sup> But it is important to note that the 2002 U.S. economy was 10 times larger than 1940 and five times larger than 1945.<sup>21</sup> So while manufacturing is now a smaller portion of the gross domestic product, it has not necessarily diminished in size.

Perhaps a better argument, put forth in a *Parameters* article on national mobilization, is that less excess capacity is available to mobilize during a crisis. As competition stiffens, businesses "right size" and employ efficiencies to remain competitive in the international market. Idle production assets are sold off and

corporations consolidate to maximize profitability. “Just-in-time” deliveries reduce inventory.<sup>22</sup> Flourishing businesses do not have unused production assets standing ready for a sudden increase in orders. Barron’s weekly financial paper illustrates U.S. Steel as being in the best shape in decades due to rising steel prices and a new efficient and competitive edge. But many other steel companies have gone bankrupt or have been consolidated by foreign giants. So even though U.S. Steel is the nation’s largest steel producer at 22 million tons in 2004, it is ranked sixth in the world and only produces 2% of the global production.<sup>23</sup> Although healthy and efficient, a wartime crisis may not get much more out of this producer. The same attributes that make a business efficient and profitable also leave less room for increased productivity in time of crisis.<sup>24</sup>

Even more of a concern is the possibility of completely outsourcing a critical defense component overseas. Dependency on foreign manufacturers is a major argument BAA advocates make against free trade. The General Accounting Office (GAO) cites three disadvantages to foreign source procurement: Reliability of the source, loss of domestic production capabilities due to importing, and foreign access to U.S. advanced technologies used in weapons.<sup>25</sup> The fear is that foreign governments could easily impose an embargo against the United States and suddenly deprive the U.S. of a particular resource or component vital to defense plans, supplies or equipment. Consider the influence the Organization of the Petroleum Exporting Countries has on oil, or the disruption the Sudden Acute Respiratory Syndrome had on trade and it is easy to see the potential impact foreign dependency has on U.S. interests. “A tight network of foreign industries and supporting institutions that dominate key technologies could exercise global power by setting the terms under which the technology is traded,” warned the GAO in a 1993 report on the defense industrial base.<sup>26</sup> But this fear proved unfounded during Desert Storm when the Department of Commerce received requests to help expedite supplies. Only 5 of the 91 requests involved foreign manufacturers and all were resolved quickly.<sup>27</sup> More recently, a Swiss company refused to sell components for precision guided bombs to the U.S. due to the legal ramifications of a neutral country supporting a belligerent involved in the war with Iraq.<sup>28</sup> However, acquisition officials were able to find a second source supplier without much difficulty. To date, the argument against outsourcing production has not proven to be a major problem.

## U.S. SKILLED WORKFORCE

With respect to workers, globalization of markets has led to many lost U.S. jobs. Congressional leaders point to a loss of 77,000 manufacturing jobs in Wisconsin over a two-and-a-half-year period and 2.4 million lost in the United States between 1998 and 2003. They contend the loss of jobs is due to weak demand, automation, globalization of operations, consolidations and mergers as well as uncertainty caused by war [with Iraq.]<sup>29</sup> This erosion of skilled jobs and manufacturing reduces America's strength in economics and the security a strong industrial base provides.

Despite lawmakers concerns and attempts to keep U.S. jobs, the trend is not likely to reverse. A senior economist and strategist for Lord, Abbet & Co. wrote in a *Barron's* editorial that the outsourcing of jobs is inevitable. He forecasts that 3.3 million white-collar jobs will be exported by 2015. He cites IBM statements that a Chinese programmer earns \$12.50 per hour compared to the American equivalent earning \$56. Software engineers in Bangladesh earn \$30,000 per year, just one sixth the salary of the average Silicon Valley counterpart.<sup>30</sup> To remain competitive, both at home and abroad, U.S. industries are compelled to take advantage of such reduced costs whenever feasible.

To keep employment numbers strong, many countries provide subsidies to domestic businesses. Boeing cites the extensive 33-percent direct-subsidy loans provided by European companies in support of Airbus as an example that threatens American jobs.<sup>31</sup> Such subsidies have enabled the European aerospace company to surpass Boeing, the sole U.S. manufacturer, in commercial market dominance. In the meantime, Boeing has laid off workers and exported other jobs overseas in order to be globally competitive. While economists argue this will make Boeing more competitive, it has resulted in the loss of aerospace jobs that could be vital to U.S. defense needs in the future. BAA proponents argue that such subsidies are commonplace and that the Buy American Act is simply leveling the playing field for U.S. industry.

## TECHNOLOGY TRANSFER

Technology transfer has always been a threat to DoD dominance, but increasingly so as the industry globalizes. There are numerous methods of technology transfer such as espionage, reverse engineering, third-party transfers and licensed production of dual-use technologies. When industries merge on an international scale, or when the U.S. exports jobs or goods overseas, the technology and intellectual

property associated with the product are vulnerable to exploitation. While the U.S. is careful to apply export laws, those laws are hard to enforce once outside U.S. jurisdiction. It is relatively safe to sell a product to an ally and demand that it not be distributed further. But it becomes very hard to enforce once that item is manufactured overseas. When an overseas manufacturer makes a defense product, they gain significant knowledge of the component technology and industrial processes used to manufacture that item. Production information becomes corporate knowledge and is often built into other products for civilian or military use and may be sold to states with whom the U.S. would normally prohibit such exports. The true extent of technology transfer is difficult to quantify, but does appear to be on the rise. The Department of State monitors overseas manufacturing agreements through "Blue Lamp Program" spot checks. For random audits conducted during fiscal year 2003, they concluded that 18 percent of the transactions resulted in unfavorable technology transfer, the highest in the thirteen-year history of the program.<sup>32</sup> Thus technology transfer can easily and invisibly extend beyond the trading partner to other nations.

In testimony to Congress, Richard Fisher of the Center for Security Policy explained how co-production and commercial sales led to undesirable technology transfers to the People's Liberation Army (PLA) of China. Allegedly the European Union transferred satellite technology and jet engines to China based on a liberal view of the current arms embargo and seeks to completely lift the embargo and conduct robust arms trading with China. "Once the EU embargo is lifted, it can be expected that many European defense companies that now cooperate with U.S. defense companies will seek cooperative alliances with PLA-controlled companies. Such moves should be "...viewed with concern in Washington as these alliances could prove to be very useful avenues for future PLA espionage against U.S. defense technology," according to Fisher.<sup>33</sup> He concluded, "The U.S. should develop both broad and specific warnings that if Europe decides to become the PLA's new military-technical supplier, that the U.S. will take appropriate measures to defend critical defense technologies, which may affect long-term European access to future U.S. technical innovation."<sup>34</sup>

Permitting open trade with the EU defense industry may run the risk of technology transfer, but curtailing trade and cooperative agreements could be equally damaging. Countries of the EU are among our biggest trading partners and allies. So while joint ventures such as the F-35 Joint Strike Fighter risk unintentional technology transfer, halting such cooperation would chill transatlantic relations, hinder allied

interoperability and drive up costs of defense procurement for both sides. Pakistan has been a significant ally of the U.S. in the fight against terrorism. But a Pakistan military official allegedly claimed that the Chinese reverse engineered several components of their new J-10 supersonic fighter from an F-16 Pakistan secretly traded to them during the 1980s.<sup>35</sup> Policymakers are now in the process of debating the sale of 78 more F-16s to this valuable ally, while also considering the possibility of undesired technology transfers.

However, it is not just military equipment that poses a transfer concern. Dual-use technologies are commercial products that can be used for military applications and are even more difficult to control. Restricting dual-use exports hurts the commercial sector, but permitting such exports may result in military conversion or technology transfer for military use. The F-16 flight control system may have been transferred to China through U.S. licensed production of commercial aircraft flight control systems.<sup>36</sup> Other examples of dual-use technology include Global Positioning Satellite receivers that could be used for cruise missile guidance. The convergence of military and civilian technologies makes defining and controlling dual-use technologies even harder.

China recently agreed to a U.S. Department of Commerce request for greater end-use validation and auditing. As such the Bureau of Industry and Security will be able to access China end-use products to determine that dual-use items are being used only for the purposes agreed to during export. The Department of Commerce states that compliance with such audits increases U.S. faith in Chinese end-use agreements and will open the door to further trade, especially where high technology items are involved.<sup>37</sup> However, validating dual-use compliance does not necessarily prevent technology transfer to other commodities or industrial processes.

#### OFFSET AGREEMENTS

When countries or corporations agree to buy a commodity, they frequently negotiate an offsetting trade agreement. For example, Japan may insist that Boeing buy components for their airliners from Japanese companies as a condition of sale. This lowers the net import cost of the product and helps offset the trade balance between the two countries. This reduces the percentage of production accomplished in the U.S. and outsources capacity and manpower. But failing to consent to an offset could be a deal-breaker and result in the loss of a sale altogether.

The Department of Commerce annual Defense Trade Offset report to Congress found increasing use of offsets in defense trades and summarized:

Foreign purchasing governments are under pressure to sustain their indigenous defense companies or to create new ones and, accordingly, are demanding more offsets. Coupled with the recent world economic slowdown, significant public outlays for foreign-made weapon systems become even more controversial, which leads to higher offset demands to deflect political pressure.<sup>38</sup>

The more technologically advanced the trading partner, the more likely they are to negotiate a sizeable offset. The Department of Commerce concluded that, "More advanced economies are able to absorb more offsets, both direct and indirect. Typically, their infrastructures are more advanced, and they are more likely than other countries already to have in place a diverse pool of industries among which to distribute offset transactions."<sup>39</sup> Almost all purchasers of U.S. defense systems are advanced economies and require offset agreements as a condition of the sale.

While offsets reduce the overall export value of defense products, they can also enhance the defense preparedness of the United States in several ways. Revenues generated by export sales are crucial to producers of U.S. defense systems and, by extension, to U.S. foreign policy and economic interests. Exports of major defense systems help defray high overhead costs for the U.S. producer and help keep production lines and workers employed and available to respond to national mobilization if necessary. Exports also provide additional business to many U.S. subcontractors and lower-tier suppliers as well as adding positively to U.S. international trade balances.<sup>40</sup> The Department of Commerce reported that as a whole, prime contractors and subcontractors experienced job increases of 5 and 21 percent over the course of the five-year study.<sup>41</sup> Furthermore, defense exports rose by 124 percent for the companies involved. Exports for the period were \$28.6 billion while offset agreements totaled \$22.8 billion for a net gain of \$5.8 billion dollars in export.<sup>42</sup> In short, the U.S. gained more from offsets than our trading partners.

#### FOREIGN ACQUISITION, MERGERS, AND LICENSING

Today "Made-in-the-USA" does not necessarily mean made by U.S. owned companies. Many corporations are merging or being bought out by foreign investors. *DefenseNews* quoted Andrew James, a senior lecturer in Science and Technology Policy Management at the University of Manchester in London, as stating, "The radical technological changes generated by U.S. military transformation policies and the

prospect of continued growth in the short to medium term continue to be the attractions for foreign investors.<sup>43</sup> BAE Systems of North America is a subsidiary of the British industry giant and recently purchased a U.S. company, DigitalNet. In doing so, they are well positioned to take advantage of the growing "Network Centric" warfare concept and market. One British corporate president told Prime Minister Tony Blair, "Access to the U.S. defense market and to U.S. defense technology is as critical to the future of the U.K. aerospace industry as it is to the operational effectiveness of the U.K. armed forces."<sup>44</sup> Enhanced access to contracts and technologies, coupled with U.S. budget and trade deficits that weaken the dollar, make foreign investment in U.S. companies an appealing business arrangement.

During 2003, a DoD review of 40 foreign acquisitions of U.S. firms reported that:

Thirteen percent of the transactions involved U.S. firms deemed to possess critical technologies; 21 percent of the U.S. firms were determined to be otherwise important to the defense industrial base; and two percent met both criteria. In most cases, the Department, acting under its own industrial security regulations or other means, remedied its concerns by imposing measures on the acquiring firms to reduce risks of foreign ownership, control and influence on national security. In only one case has a Presidential Investigation been necessary.<sup>45</sup>

On the positive side, collaboration between corporations improves innovation and reduces redundant design and research. Lockheed Martin worked with a British firm to produce special electronics for the Royal Marines. During the course of that partnership, the company found that the U.K. was ahead of the United States on tactical and logistical vehicles development and agreed to manufacture British vehicles under license within the U.S. The vehicles will be 90 percent made in America.<sup>46</sup> Such collaborative efforts are a benefit to the defense department without being a threat.

#### THE NATIONAL SECURITY STRATEGY OF FREE MARKETS

The National Security Strategy states "...the United States will work with individual nations, entire regions and the entire global trading community to build a world that trades in freedom and therefore grows in prosperity."<sup>47</sup> Likewise, DoD policymakers recognize that free trade enhances military alliances as well as international relations in terms of diplomacy and economics. Both the DoD and the defense industry subscribe to the economist outlook on free trade. They cite lower prices, increased consumer choice, increased national efficiency and comparative advantage in trading as the benefits of open competition in domestic markets. Technology in terms of the product as well as

the manufacturing process is shared and advanced by both trading partners. To restrict free trade would protect declining industries and impose a burden on the economy through the loss of comparative advantage, decreased competition and monetary inflation.<sup>48</sup> Weighing these principles against the production security needs of the military has been a constant source of contention.

As an example, one piece of the Abrams M1A1 tank exhaust system is made overseas even though it could be manufactured in the U.S. However, to build it domestically would require a \$1.5 million plant to produce \$1 million in parts over a five year period.<sup>49</sup> Obviously sourcing this component to an overseas vendor is much more cost effective for the U.S. Another example of the benefit of global trade is found in the production of the Joint Service Lightweight Integrated Suit Technology (JSLIST) chemical protective suit. This suit benefits from an improved charcoal liner developed by a German company. The new technology is not classified, but is proprietary property of the German company and produced overseas. In fact, 20 percent (in terms of value) of the suit is produced offshore.<sup>50</sup> This did not present a problem during the lead up to the Iraq war when the DoD accelerated procurement in preparation for possible chemical warfare. Key German and Japanese suppliers for the JSLIST suit surged production during Operation Iraqi Freedom from 70,000 suits per month to 128,000 per month.<sup>51</sup> The U.S. was able to benefit from this “cutting edge” technology without having to spend time and money on research and development.

In another case, congressional leaders worry about exporting all our microchip making capability overseas and advocate maintaining at least one domestic company to produce these valuable chips. But an OSD report on the Industrial base illustrated the high costs of doing so. A facility would cost \$2 billion to build and a few hundred million dollars per year to upgrade with ever-increasing state-of-the-art chip making capabilities. Furthermore, the factory would have to make chips for all DoD projects as well as a substantial amount of commercial chips to keep costs reasonable. Such a project would not be economically feasible, and would run into production risks associated with single-supplier products.<sup>52</sup> By contrast, consider the production of flat panel display screens, such as those found on computers or on technical equipment. Today they are manufactured entirely outside of the United States. When the technology first emerged, the U.S. insisted domestic computer makers buy displays from U.S. suppliers to keep this unique manufacturing capability viable within this country. The net result was an increase in the cost of computers manufactured in the U.S. that subsequently priced

them out of the international market and drove sales down.<sup>53</sup> In the end, the economic loss was deemed to be of greater value to the United States than maintaining the domestic production capability and the restriction was lifted. In short, the cost of propping up certain industries is expensive. Security concerns must be balanced with the diplomatic and economic benefits of a free market that in return provides new capabilities to the DoD.

#### INTEROPERABILITY, SHARED R&D AND ALLIANCES

Government-to-government cooperation in defense procurement is often desired, but faces obstacles. The business and technology magazine *Interavia* sums up the two opposing arguments of the free trade dilemma. The first is for increased trade to promote cooperation, economical development, technological and operational advantages. The opposing argument is the fear that loosening U.S. regulations will result in greater foreign direct investment, technology sharing, and undesirable third-party transfers of critical materials and components.<sup>54</sup> The result is a series of laws and controls that do not effectively resolve either argument and have resulted in a "...fairly patchy track record..." of government defense cooperation.<sup>55</sup>

Lack of cooperation among allies will have several negative impacts according to a report by the Center for Strategic and International Studies, *Making Transatlantic Defense Cooperation Work*. The report warns of unnecessary and wasteful duplication of effort as well as adversarial defense markets that cannot provide allied forces with the necessary tools for full spectrum defense. Additionally, the report recommends streamlining "critical items" export control lists, increasing exemptions from "buy American" acquisition laws, and avoiding sole-source defense products from U.S. companies. The authors argue both sides of the Atlantic have much to gain from defense procurement cooperation.<sup>56</sup>

The Medium Extended Air Defense System (MEADS) is an excellent example of the difficulties involved in opening up greater defense trade access across borders. Initially France, Germany, Italy and the U.S. agreed to build the program but France dropped out when it came time to sign the agreement. The result was a 55-percent U.S., 28-percent German and 17-percent Italian investment in the R&D effort with the prime contractor based in Florida—a Lockheed/Italian and EADS/LFK consortium. By the late 1990s, the program faced funding uncertainties as the Pentagon debated the value of the system which was similar to existing U.S. capabilities. The program fell apart when

the U.S. Army preferred to buy an upgraded version of the Patriot missile instead of pursuing MEADS development. This left the Italians and Germans with the only feasible option of buying the U.S. made system. Adding salt to the wound, the U.S. insisted on security inspections of European-fielded Patriot systems to ensure U.S. technology was not being exploited. This obviously upset the European partners, both on account of economics, and as a matter of trust and cooperation.<sup>57</sup> Such instances run counter to U.S. nation-building and security strategies of cooperation and free-markets, while simultaneously prompting EU nations to build their own indigenous defense industries in an attempt to exert greater control over reliable military procurement. The MEADS example is not a unique case. Current U.S. funding debates on the F-35 Joint Strike Fighter could potentially cause the collapse of this multi-national venture.<sup>58</sup> International cooperation produces benefits, but also comes with unique risks.

#### INFLUENCE OF FOREIGN MILITARY SALES

Selling military equipment to foreign countries provides business opportunities for the DIB. In terms of industry, foreign military sales (FMS) help defray U.S. equipment development costs, keep the DIB production lines running, and subsequently provide an avenue for additional mobilization capacity should the need arise.<sup>59</sup> Furthermore, these military sales are used to assist political goals and provide commonality with our allies.

Countries that do not purchase defense equipment from the U.S. must either build their own, or purchase from a third party. If they elect to build their own domestic industry, they often enter the arms market as a seller to utilize excess production capacity and keep costs down. If they purchase from a third party, then they support that supplier's defense production capability. Either way can be harmful to American strategy if the third party involved is hostile to the U.S.

Burkhard Schmitt, a European proponent of free trade in the defense industry, described an unfavorable scenario if defense trade is stifled. First, foreign countries will have to build their own defense industries if they cannot afford or cannot obtain U.S. arms. Second, these industries cannot stand alone, especially if costly duplications in weapons systems are not avoided. Some companies may have to make use of dual-use technology that the U.S. would prefer to keep out of worldwide armaments. Companies will increase arms sales to foreign governments to keep their industry viable and affordable. Third, greater arms sales to foreign countries result in a military disadvantage if sold to U.S. adversaries. Or if the sale is to an ally, it represents a lost

business opportunity for the U.S. defense industry as well as diminished military interoperability.<sup>60</sup>

Many of the factors described above are dual edged swords. Increased international cooperation benefits participating nations in terms of costs, efficiencies, shared R&D, and interoperability. In the end, these benefits must be weighed against the hazards of foreign dependency, technology transfer and diminished domestic production capacities.

## **U.S. GOVERNMENT CONTROLS ON INDUSTRY**

For policy makers juggling defense requirements, budgets and constituent demands, the question is: When is it acceptable to have free defense trade and when it is not? How can strategists decide? What formula should they prescribe? As the industry has evolved over the past few decades, U.S. policy makers have cobbled together a series of laws, policies and lists in an attempt to balance the opportunities against the threats of a globalized industrial base.

Congress wants to keep jobs and industry in the U.S. as well as promote the security of having a domestic industrial base. Congress legislated the Buy American Act (BAA) in 1933. This act requires all government purchasers to validate that the products and services they buy are at least 50 percent made-in-America and to give a six percent advantage to domestic businesses over foreign bids.<sup>61</sup> The act also requires the DoD to monitor foreign purchases to guard against potential problems revolving around foreign dependency for critical components and supplies. In 1941, Congress passed the Berry Amendment which imposed additional restrictions on government acquisition by directing the DoD to purchase only 100 percent American-made textiles and apparel.<sup>62</sup> However, these laws contain a number of loopholes. They do not apply to the North American Free Trade Agreement and other trade agreements. Further exemptions permit the departments to purchase foreign made goods if they are not available in sufficient quantity or if U.S. goods are unreasonable in cost.<sup>63</sup> However, many lawmakers feel this is too lenient and have attempted to strengthen the requirements of the act with recent proposed improvements.<sup>64</sup>

When Congress introduced Senate and House resolutions in the fall of 2003 that proposed strengthening the Buy American Act (referred to as the Buy American Improvement Act or BAIA), many in the industry and in the DoD were adamantly opposed. Secretary of Defense, Donald Rumsfeld, was prepared to recommend a veto

of the Buy American Improvement Act if passed based on the fact that, "Provisions in the House bill would deny critical technologies and capabilities obtainable only, or most economically, from non-U.S. sources." He revealed the extent of foreign involvement in U.S. defense industry by surmising that \$4.5 billion in Joint Strike Fighter cooperation was at stake. Furthermore, he pointed out that the provision would significantly reduce the DoD supplier base and require U.S. companies to refit billions of dollars of foreign-made machine tools.<sup>65</sup> The National Defense Industrial Association (NDIA) listed this trade issue as one of the top ten issues for 2004 and argued for free trade. "NDIA supports a competitive global marketplace for defense-related industrial contracting, except where there may be national security risks associated with foreign production," it explained.<sup>66</sup> "In our view, to support a blanket Buy American proposal is to support market-distorting behavior." The NDIA further argued that such activity can actually harm the DIB over the long term by limiting technological advancements, cost efficiency, and negate adoption of the best production processes.<sup>67</sup> Similarly, 17 members of the Aerospace Industries Association (AIA) supplier management council opposed the amendment. They argued that the industry exports 40 percent of its products making it the largest net exporter in the nation. Strengthening the amendment would raise reciprocal barriers to exports threatening this trade surplus and increase costs to taxpayers by limiting source selection.<sup>68</sup>

Selling defense products is perhaps even more regulated than buying them. Ever since WWII, the U.S. has imposed some form of export control. In 1979, the latest legislation was introduced and called the Export Administration Act. The act is enforced by the Bureau of Industry and Security within the U.S. Department of Commerce. However, the act expired in 1990 and has yet to be re-introduced due to numerous disagreements on how to best enact such legislation. As it stands right now, the President has declared emergency authority to keep the provisions in place until Congress can enact new laws. These provisions provide licensing agreements, review export permits for munitions and dual-use technologies, as well as place some countries, like Cuba, Iran and North Korea, on a near-total embargo list.<sup>69</sup>

Another form of export control is the Arms Export Control Act (AECA) which prohibits certain defense trades, information disclosure to a non-resident alien and the export of certain defense articles and technical data. The International Traffic in Arms Regulations (ITAR) is the regulation that implements the AECA. Included in the ITAR is a munitions list that identifies specific items or classes of items that are subject to export

controls under the AECA. In general, the ITAR prohibits the export of items on the munitions list and the technical data associated with these items unless 1) an exception listed in the ITAR applies, or 2) an “export license” is obtained from the State Department.<sup>70</sup> Any U.S. firm wishing to export a product must run the gauntlet of export laws and bureaucracy. This process takes considerable time, and intimidates smaller companies from joining the international market. And finally, there is a frustration within the industry that the U.S. imposes too much export control over items that are already available in foreign markets.<sup>71</sup> Such export controls hinder free market competition and international cooperation.

While the European Union frequently complains about U.S. export laws and detests the Buy America Act, it is interesting to note that the EU's 25 nations also employ a similar form of closed contract bidding to steer business toward their own domestic companies. That may change in the near future though with new laws designed to open competition to cross-border companies. The issue the EU is struggling with, however, is how to handle exceptions to policy for contracts that are deemed an “essential security interest” and then how to balance that against “...the principle of the internal market and its guarantees for free movement across borders of goods and services,” according to a recent *DefenseNews* article.<sup>72</sup>

Reports from Great Britain indicate they are similarly interested in integrating with the U.S. defense market, but are also struggling with some of the same concerns as U.S. leaders. The Minister of Defense for Great Britain has announced his country will have an industrial strategy by 2005 to identify key capabilities that must be retained by U.K. companies. *DefenseNews* quotes procurement minister Lord Bach as stating “This is not about protectionism, or subsidies or propping up inefficient businesses. It’s about giving industry an honest assessment of what we expect we will want to buy in the future and whether we need to place any constraints on our sources of supply.”<sup>73</sup>

There has been some movement recently to try to streamline the regulatory requirements on export controls for pro-U.S. countries like Great Britain and Australia. In an effort to shore up any concerns that U.S. policymakers may have about easing defense trade restrictions, the British recently tightened export controls to strengthen technology transfer prohibitions, especially as related to weapons of mass destruction. This was a result of a 1996 report exposing “Arms to Iraq” scandals and focused a great deal on obscure transfers of technology via fax, email and telephone methods.<sup>74</sup> In such

a manner, the British hope to assuage U.S. fears of third-party technology transfers and reduce export restrictions.

Despite any apparent drawbacks, the Secretary of Defense advocates competition, free trade, compliance with treaties, and multi-national cooperation on defense procurement. The Defense Acquisition Guidebook, a compilation of memorandums and regulations, states:

The DoD actively seeks to include allies and friendly foreign countries as partners in the research, development, test and evaluation (RDT&E); production; and support of defense systems. The Department of Defense encourages early involvement with allied and friendly foreign partners. Such cooperative foreign government partnerships should begin at the requirements definition phase, whenever possible. Successful execution of cooperative programs will promote the desirable objectives of standardization, commonality, and interoperability. The U.S. Government and its foreign government partners in these endeavors will benefit from shared development costs, reduced costs realized from economies of scale, and strengthened domestic industrial bases. Similarly, the DoD plays a key role in the execution of security cooperation programs that ultimately support national security objectives and foreign policy goals. U.S. defense system sales are a major aspect of security cooperation.<sup>75</sup>

The Deputy Under Secretary of Defense for Industrial Policy is responsible for recommending policy and reporting on the health of the U.S. defense industrial base. DoD components traditionally identify critical industries that are in danger of being lost and recommend actions to sustain the industry. These cases are fairly small percentages. For the most part, the department advocates the benefits of free international trade "...offered by access to the most innovative, efficient, and competitive suppliers—worldwide."<sup>76</sup>

Following development of *Joint Vision 2020* (JV2020), and transformation guidance from the Secretary of Defense, the department initiated the Defense Industrial Base Capabilities Study (DIBCS) as a new way of looking at the DIB. The focus was not on current capacity, but rather on the posture of the DIB to produce the future capabilities needed by the U.S. military. It followed the guidance set by the DoD to transform to a capabilities-based approach in an effort to align industry with military strategy. The study identified the six core concepts of future capabilities; Battlespace Awareness, Command and Control, Force Application, Focused Logistics, Protection, and Network Centric Operations. The department then expanded upon the annual study with a series of six reports, one for each functional capability. They worked with the

Joint Staff to identify the specific, emerging technologies necessary to enable these future capabilities. Then they surveyed U.S. industry to determine if the capabilities existed to develop the desired future technologies. As of this writing, three of six reports were completed and found that the U.S. defense industry was sufficiently robust to produce those leading edge technologies with few exceptions. Furthermore the department announced that sufficient “policy levers” exist to protect these vital industrial capabilities.<sup>77</sup>

## **RECOMMENDATIONS FOR A U.S. INDUSTRIAL BASE STRATEGY**

As globalization transforms the economies of the United States and the world, the United States must adapt to this new environment. Maintaining outdated regulations, export lists and processes for procurement that hinder the benefits of a free market are only justified if they are feasible and effective. Unfortunately, examples such as flat panel display screens, microprocessors and exhaust systems for Abrams tanks suggest it is too expensive to maintain a closed market. Chinese acquisition of satellite technology, flight control systems and sophisticated jet engine knowledge prove that existing controls are not entirely effective either. In essence, the current process is insufficiently nimble in today’s dynamic environment and must be overhauled from the ground up.

Trade regulations should be simplified and limited. Current government controls are cumbersome, slow and complex. Instead, export controls and regulations should be revised to ensure enhanced competition, reduced costs, and greater procurement alternatives to keep industry lean and responsive. The DIBCS methodology for identifying the critical technologies needed to enable future transformation is an excellent framework on which to build lean regulations that support U.S. development of leading technologies. The DIBCS scope is limited enough that it could be enforced fairly and completely. It would not protect declining industries, but would foster development of emerging technologies in their infancy. It has a direct relationship to our nation’s defense and long-range vision of military capabilities. Additionally, U.S. corporations would be in prime position to leverage spin-off technologies into new commercial applications.

As the federal government makes this shift, DoD acquisition regulations and culture must adapt as well. The acquisition community needs to be able to reach out and grab offshore technologies and developments and implement them immediately.

The JSLIST chemical protection suit is an excellent example of how a globalized industrial market can save the U.S. development time and money. Other such opportunities are bound to arise and the military acquisition community needs the freedom to take advantage of such opportunities. This may mean setting aside a portion of the budget to acquire emerging technology—a difficult proposition but necessary to ensure full exploitation of worldwide innovation.

As the U.S. simplifies and opens its defense markets, trade representatives must insist other countries do the same. Economists argue the U.S. will benefit from comparative advantage whether U.S. trading partners respond in kind or not. Nonetheless, the U.S. should pursue and advocate fair trade and promote international law enforcement of treaties and free markets. In this manner the complete benefits of an open market, including cooperative R&D, technology sharing and interoperability are maximized.

While buy America restrictions are good in the short term, the benefits over the long haul are not self-sustaining. The U.S. economy is based on capitalism and every program that supports a declining industry imposes an economic burden and distorts the overall market. A small restriction in the name of security may be necessary, but it should be limited to those industries that defense experts feel are absolutely essential to developing the next wave of technology and transformation. Maintaining the skilled workforce is important, but allowing the natural market forces to retire out-dated businesses while inspiring new ones will be better over the long haul. Publishing this element of strategy in the Quadrennial Defense Review and associated documents will help educate the American public on the DoD vision and policy. Information operations to garner support from the public should be aggressively pursued.

As the defense industry globalizes further, increased data collection is necessary to monitor the industrial base. Current reporting requirements are geared toward fulfilling Congressional requirements than toward fully comprehending the DIB environment. The DoD should take a deeper interest in data collection and backbrief Congress on the trends and findings instead of merely fulfilling legislated reporting requirements. With the proliferation of information technologies, a simple yet effective data base collection and analysis effort could be started without delay. As Sun Tzu said, “know the enemy and know yourself.”<sup>78</sup> The DoD must study the entire defense industrial base and look at it like a target analyst. The department must understand the centers of gravity and critical vulnerabilities to ensure a secure supply and

manufacturing chain for the military and key U.S. industries. The DoD, Office of Management and Budget, and Congress all want to reduce reporting requirements and are loathe to add new processes. But the department could build a data base collection effort that meets current requirements, provides in-depth industrial base monitoring, as well as lays the foundation for future reports yet to be determined. A little investment in this data collection effort would ensure the U.S. transitions from the industrial age to the information age without losing situational awareness of the global environment.

Just as the DoD has pursued a military transformation vision, U.S. policy makers need to do the same with the defense industrial base. A complete overhaul of legislation and regulations is necessary to take full advantage of a globalized industrial base. It must be clearly formulated, articulated to the American public, enforced internationally, and then carefully monitored with improved information technologies. In this manner, the benefits of a free market can be realized while easing key national security concerns.

WORD COUNT = 7,823

## ENDNOTES

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<sup>2</sup> Jason Sherman, "Pentagon Launches 2005 QDR," *DefenseNews*, 8 November 2004, p. 4.

<sup>3</sup> Vago Muradain, "Finalizing Transformation," *DefenseNews*, 8 November 2004, p. 34.

<sup>4</sup> Hugo Posey and Ben Stone, "U.S. Defense-Export Controls: Stuck in Cold War," *National Defense*, September 2004, 50.

<sup>5</sup> Office of the Under Secretary of Defense, Acquisition and Technology, *Final Report of the Defense Science Board Task Force on Globalization and Security*, (Washington D.C.: U.S. Department of Defense, 1999), 3.

<sup>6</sup> *Ibid.*, i.

<sup>7</sup> Martin Wolf, *Why Globalization Works*, (Cumberland, RI: Yale University Books, 2004), 82

<sup>8</sup> *Ibid.*, 81.

<sup>9</sup> *Ibid.*, 82.

<sup>10</sup> *Ibid.*

<sup>11</sup> Thomas Freidman, "Dueling Globalizations," *Foreign Policy* (Fall 1999): 124.

<sup>12</sup> Nader Elhefnawy, "National Mobilization: An Option in Future Conflicts?" *Parameters* 34 (Autumn 2004): 124-125.

<sup>13</sup> Robert Famighetti, ed., *The World Almanac and Book of Facts 2000* (Mahwah, NJ: Primedia Reference Inc., 1999), 133 & 163.

<sup>14</sup> David Mussington, *Arms Unbound: The Globalization of Defense Production* (Cambridge: Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, 1994), 7.

<sup>15</sup> Office of the Under Secretary of Defense, Acquisition and Technology, "Final Report of the Defense Science Board Task Force on Globalization and Security" (Washington, D.C.: Department of Defense, 1999), 7.

<sup>16</sup> Burkard Schmitt, "European and Transatlantic Defense Industrial Strategies: A European Perspective," available from <<http://www.iss-eu.org/new/analysis/analy036.html>>; Internet; accessed 21 September 2004.

<sup>17</sup> Department of Defense, *Transformation Planning Guidance* (Washington, D.C.: U.S. Department of Defense, April 2003), 6.

<sup>18</sup> Hans Binnendijk, ed., *Strategic Assessment 1999; Priorities for a Turbulent World* (Washington D.C.: Government Printing Office, 1999), 263.

<sup>19</sup> Center for Strategic and International Studies, "Deterrence in Decay: The future of the U.S. Industrial Base" (Washington, D.C.: The Center for Strategic and International Studies, May 1989), 11.

<sup>20</sup> Nader Elhefnawy, "National Mobilization: An Option in Future Conflicts?" *Parameters* 34 (Autumn 2004): 124-125.

<sup>21</sup> Department of Commerce, Bureau of Economic Analysis, "1947-2001 Gross Domestic Product by Industry," available from <<http://bea.gov/bea/dn2/gpo.htm>>; Internet; accessed 4 October 2004.

<sup>22</sup> Nader Elhefnawy, "National Mobilization: An Option in Future Conflicts?" *Parameters* 34 (Autumn 2004): 124-125.

<sup>23</sup> Andrew Bary, "Heavy Metal," *Barron's*, 8 November 2004, p. 22.

<sup>24</sup> Nader Elhefnawy, "National Mobilization: An Option in Future Conflicts?" *Parameters* 34 (Autumn 2004): 125.

<sup>25</sup> General Accounting Office, *Industrial Base: Significance of DOD's Foreign Dependence* (Washington, D.C.: U.S. General Accounting Office, January 1991), 4.

<sup>26</sup> General Accounting Office, *Defense Industrial Base: An Overview of an Emerging Issue* (Washington, D.C.: General Accounting Office, March 1993), 9.

<sup>27</sup> *Ibid.*, 8.

<sup>28</sup> Bill Gertz, "Swiss Delay of Military Parts Sparks 'Buy American' Push," *Washington Times*, 25 July 2003, p. 4.

<sup>29</sup> Russ Feingold, "U.S. Senator Russ Feingold on the Buy American Act," available from <<http://feingold.senate.gov/speeches/03/07/2003820902.html>>; Internet; accessed 2 October 2004.

<sup>30</sup> Milton Ezrati, "Employment Insecurity," *Barron's*, 8 November 2004, p. 41.

<sup>31</sup> John Leicester, "Boeing chief says he's trying to avoid U.S.-EU subsidy fight," *Seattle Post Intelligencer*, 24 September 2004, available from <[http://seattlepi.nwsource.com/business/192186\\_boeingairbus24.html](http://seattlepi.nwsource.com/business/192186_boeingairbus24.html)>; Internet; accessed 25 September 2004.

<sup>32</sup> Secretary of State, *Congressional Budget Justification: Foreign Operations* (Washington, D.C.: Bureau of Resource Management, U.S. Department of State, FY2005), 547 – 551. The Directorate of Defense Trade Controls is responsible for administering the International Traffic in Arms Regulations that implement the Arms

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<sup>33</sup> Richard D. Fisher, "Foreign Military Acquisitions and PLA Modernization," written testimonies of Richard D. Fisher, Jr., Center for Security Policy, before the U.S.-China Economic and Security Review Commission (6 February 2004), available from: <[http://www.uscc.gov/hearings/2004hearings/written\\_testimonies/04\\_02\\_06wrts/fisher.htm](http://www.uscc.gov/hearings/2004hearings/written_testimonies/04_02_06wrts/fisher.htm)>; Internet; accessed 4 November 2004.

<sup>34</sup> Ibid. The report warned that high-tech flight control systems from the F-16 are now making their way into the Chinese produced J-10 fighter which will likely outperform U.S. produced F-16s.

<sup>35</sup> "Advanced Chinese and Pakistani Fighter Utilizes Illegally – Or Accidentally – Transferred Sensitive US Technology," *Defense & Foreign Affairs Daily*, 8 November 2004. Exclusive. From GIS (Global Information System) Station Beijing and other sources. The article cites the 1999 Cox Commission report on China and also highlights other potential transfers such as single-crystal metals used in high performance jet engines now found on Chinese and Russian aircraft.

<sup>36</sup> Ibid.

<sup>37</sup> Department of Commerce, Bureau of Industry and Security, *Streamlining and Strengthening Export Controls Overview of the Bureau of Industry and Security's Recent Efforts to Streamline and Strengthen Export Controls: U.S.-China end-use visit understanding*, available from <http://www.bxa.doc.gov/eea.html>; Internet; accessed on 12 November 2004.

<sup>38</sup> Department of Commerce, Bureau of Industry and Security, *Offsets in Defense Trade: Eighth Report to Congress* (Washington, D.C.: Department of Commerce, July 2004), available from <<http://www.bxa.doc.gov/DefenseIndustrialBasePrograms/OSIES/offsets/default.htm>>; Internet, accessed 11 November 2004.

<sup>39</sup> Ibid.

<sup>40</sup> Ibid.

<sup>41</sup> Department of Commerce, Bureau of Industry and Security, *Offsets in Defense Trade and the U.S. Subcontractor Industrial Base* (Washington, D.C.: August 2004), iv. Available from <<http://www.bis.doc.gov/defenseindustrialbaseprograms>>; Internet; accessed 6 November 2004. Note: While this survey received a reply that was deemed representative of the defense industrial base, it is important to observe that only 39.5 percent of the companies surveyed responded back to the Bureau with information.

<sup>42</sup> Ibid., 2-3.

<sup>43</sup> Andrew Chuter, "British Contractors Make Waves in U.S.," *DefenseNews*, 1 November 2004, p. 10.

<sup>44</sup> Duncan Macrae, "Ebb and Flow in the Transatlantic Tide," *Interavia*, Summer 2004, 35.

<sup>45</sup> Department of Defense, Under Secretary of Defense for Industrial Policy, *Annual Industrial Capabilities Report to Congress* (Washington, D.C.: U.S. Department of Defense, February 2004), 12.

<sup>46</sup> Gopal Ratnam, "Defense Giant Turns to Trucks," *DefenseNews*, 18 October 2004, p. 40.

<sup>47</sup> George W. Bush, *The National Security Strategy of the United States* (Washington, D.C.: The White House, September 2002), 5.

<sup>48</sup> Robert Gilpin, *Global Political Economy: Understanding the International Economic Order* (Princeton, NJ: Princeton University Press, 2001), 202. In this text, Gilpin describes at length the generally accepted theories of economics and illustrates the causes and results of monetary inflation and their effect on the economy.

<sup>49</sup> General Accounting Office, *Industrial Base: Significance of DOD's Foreign Dependence* (Washington, D.C.: U.S. General Accounting Office, January 1991), 20.

<sup>50</sup> Department of Defense, Office of the Deputy Under Secretary of Defense for Industrial Policy, *Study on Impact of Foreign Sourcing of Systems* (Washington, D.C.: U.S. Department of Defense, January 2004), 30-32.

<sup>51</sup> Department of Defense, *Foreign Sources of Supply: Assessment of the United States Defense Industrial Base* (Washington, D.C.: U.S. Department of Defense, November 2004), 14.

<sup>52</sup> Department of Defense, *Defense Industrial Base Assessment 2004* (Washington, D.C.: U.S. Department of Defense, March 2004), 15. The report stated: "A consolidated semiconductor foundry for the Department would be technically feasible; however, it would come at a high cost. Industry advances occur about every three to five years requiring large capital investments to keep pace with technology. New state-of-the-art commercial fabrication facilities currently cost approximately \$2 billion and require upgrades costing hundreds of millions of dollars every year to keep abreast of technology. A government facility that is associated with a large commercial facility (e.g., a government-owned, commercially operated company run by an experienced team with access to high-volume production processes) could cost as little as \$300 million and satisfy the Department's needs. However, continual upgrades still would be needed (perhaps \$100 million per year), and operating costs would include a considerable non-recurring cost component plus substantial technology licensing costs to maintain product quality. Further, a government facility would introduce numerous risks including disruption to the current industrial base and the risk of substituting DoD-fabricated parts for commercially produced parts.

Although a national foundry could not be justified on economic grounds alone, the concerns over the integrity of the implementation of DoD semiconductor designs could

not be completely addressed within the status quo decentralized procurement regime. The study indicated general agreement that certain critical integrated circuits used in weapons systems, and even some integrated circuits used within the national infrastructure of communication, might be vulnerable to certain kinds of attack. At some cost and increased production risk, a national foundry could address the security issue.”

<sup>53</sup> Robert Gilpin, *Global Political Economy: Understanding the International Economic Order* (Princeton, NJ: Princeton University Press, 2001), 199.

<sup>54</sup> Duncan Macrae, “Ebb and Flow in the Transatlantic Tide,” *Interavia*, Summer 2004, 35.

<sup>55</sup> Ibid.

<sup>56</sup> Sir Geoffrey Pattie, and Michael T. Smith, Co Chairs, *Making Transatlantic Defense Cooperation Work: Findings and Recommendations of the CSIS Atlantic Partnership Project* (Washington, D.C.: Center for Strategic and International Studies Atlantic Partnership Project, 1996), 23.

<sup>57</sup> Duncan Macrae, “Ebb and Flow in the Transatlantic Tide,” *Interavia*, Summer 2004, 37.

<sup>58</sup> Christopher Preble, “Joint Strike Fighter: Can a Multiservice Fighter Program Succeed?” *Policy Analysis*, 5 December 2002, available from <<http://www.cato.org/pubs/pas/pa460.pdf>>; Internet; accessed 10 October 2004. The F-35 Joint Strike Fighter is proving to be another example of defense cooperation difficulties. The complexity of the defense environment is well illustrated. The U.S. military has recently revised its desired number of fighters down considerably. The Air Force based this decision on budget constraints and a review of the security environment that showed a need for fewer F-35s in light of transformation initiatives. However, this decision has some far-reaching negative impacts. Purchasing fewer F-35s will drive the price per unit up since the research, development and production costs will be distributed over a smaller volume. This higher price in turn will have a negative effect on the purchase of the aircraft by U.S. allies. Cooperating partners like the U.K. or Denmark may cancel their orders for the aircraft based on this increased cost. They may shift those orders to another company outside the United States resulting in lost U.S. production, lost interoperability and increasingly higher costs. Thus a sound decision based on U.S. military strategy may have an unintended ripple effect.

<sup>59</sup> Jacob N. Haynes, “Foreign Military Sales: Shaping Foreign Policy and enhancing the Industrial Base,” Strategy Research Project (Carlisle Barracks, U.S. Army War College, 10 April 2001), 19.

<sup>60</sup> Burkard Schmitt, “European and Transatlantic Defense Industrial Strategies: A European Perspective,” available from <<http://www.iss-eu.org/new/analysis/analy036.html>>; Internet; accessed 21 September 2004.

<sup>61</sup> Ethan B. Kapstein, *Global Arms Production* (Lanham, MD: University Press of America, 1992), 120.

<sup>62</sup> Department of Commerce, Bureau of Industry and Standards, "Department of Defense Enforcement of Berry Amendment and Other Buy American Restrictions," available from: <[http://www.bxa.doc.gov/DefenseIndustrialBasePrograms/OSIES/DefMarketResearchRpts/TexReport\\_Ch5.html](http://www.bxa.doc.gov/DefenseIndustrialBasePrograms/OSIES/DefMarketResearchRpts/TexReport_Ch5.html)>; Internet; accessed 25 October 2004.

<sup>63</sup> Federal Acquisition Regulations 25.103, "Exceptions," available from <[http://www.arnet.gov/far/current/html/Subpart\\_25\\_1.html#1108067](http://www.arnet.gov/far/current/html/Subpart_25_1.html#1108067)>; Internet; accessed 31 October 2004.

<sup>64</sup> General Accounting Office, *Defense Industrial Base: An Overview of an Emerging Issue* (Washington, D.C.: U.S. General Accounting Office, March 1993), 4.

<sup>65</sup> Donald Rumsfeld, "Letter to the Chairman of the House Armed Services Committee, July 8, 2003," available from <[http://www.ndia.org/Content/ContentGroups/Divisions1/Small\\_Business/PDFs12/04auth\\_conf\\_secdef\\_ltr.pdf](http://www.ndia.org/Content/ContentGroups/Divisions1/Small_Business/PDFs12/04auth_conf_secdef_ltr.pdf)>; Internet; accessed 2 October 2004.

<sup>66</sup> Chandra Burnside <GPPintern@NDIA.org>, "Buy America Improvement Act," electronic mail message to Mark McLean <famclean@earthlink.net>, 15 September 2004.

<sup>67</sup> Ibid.

<sup>68</sup> Aerospace Industries Association, "Suppliers Protest Buy American Provision in Letter to Congress," available from <[http://www.aia-aerospace.org/aianews/press/2003/rel\\_08\\_29\\_03.cfm](http://www.aia-aerospace.org/aianews/press/2003/rel_08_29_03.cfm)>; Internet; accessed 13 September 2004.

<sup>69</sup> American Electronics Association, "Export Administration Act Issue Brief," available from <[http://www.aeanet.org/GovernmentAffairs/gaam0399\\_eaaissue/briefFeb031of2.asp](http://www.aeanet.org/GovernmentAffairs/gaam0399_eaaissue/briefFeb031of2.asp)>; Internet; accessed 12 November 2004. The following is the AEA's concise background of the EAA: "By past legislation, Congress has authorized the President to control the export of various commodities. The three most significant programs for controlling different types of exports deal with nuclear material and technology, defense articles and services, and non-military dual-use goods and technology. Under each program, licenses of various types are required before an export can be undertaken. The Nuclear Regulatory Commission is responsible for the licensing of nuclear material and technology under the Atomic Energy Act. The Department of State is responsible for the licensing of exports of defense articles and services and maintains the Munitions Control List under the Arms Exports Control Act. Export licensing requirements for most commercial goods and technical data are authorized by the EAA under the jurisdiction of the Bureau of Industry & Security (formerly known as the Bureau of Export Administration) in the Department of Commerce.

"The three basic purposes of export controls are to protect national security, to further U.S. foreign policy interests, and to protect commodities in short supply. The Secretary of Defense is authorized to review certain applications for national security purposes, while the Secretary of State reviews specified license applications for foreign policy purposes. To assist in meeting the three basic purposes of export controls, BIS maintains a Commodity Control List (CCL) which contains over 200 categories of goods and technologies applied to four country groups. The most stringent controls (near total

embargoes) are imposed on a country group, which includes Cuba, Iraq, Iran, Libya, Syria, Sudan, and North Korea.

“The export of goods or technical data subject to the CCL must be authorized by licenses (either individual validated licenses or bulk licenses authorizing multiple shipments) which are granted on the basis of such factors as intended end-use and the probability and likely effect of diversion to military use. Exports and re-exports from a foreign country of U.S.-origin commodities and technical data, or of foreign products containing U.S.-origin components or technology, are also regulated.

“The U.S. government has employed export controls continuously since 1940. The first controls were imposed to avoid or mitigate the scarcity of various critical commodities during World War II and to assure their equitable distribution within the U.S. economy and to U.S. allies. Export controls were expected to terminate after shortages created by World War II were substantially eliminated. However, the Cold War led to enactment of the Export Control Act of 1949, designed to control all U.S. exports to Communist countries.

“The Export Control Act of 1949 provided for the control of items in short supply, for controls to further U.S. foreign policy goals, and for the examination of exports to Communist countries which might have military application. The 1949 Act, amended and extended as appropriate, remained in effect for 20 years. The 1949 Act was then replaced by the EAA of 1969, which was in turn replaced by the EAA of 1979. The 1979 EAA was reauthorized with amendments both in 1985 and 1988, but expired on September 30, 1990, when the Congress was unable to agree on the provisions for a new EAA. Following this expiration in 1990, the President was forced to step into the legal vacuum and maintain the existing export control regime by invoking authority under the International Economic Emergency Powers Act (IEEPA). Since that time, there have been six unsuccessful attempts by the Congress to adopt a new EAA. This continued failure has, in turn, required the President to issue executive orders annually invoking IEEPA authority to keep the U.S. export control system in existence. The extension of the old system has had two major effects on industry. First, the lack of a new EAA has perpetuated a system based on Cold War-era concerns and thinking and, second, continued use of IEEPA as the legal basis has come under increasing legal challenge. Congress passed legislation in October 2000 temporarily reinstating the EAA of 1979 through August 20, 2001. Unable to pass into law a new EAA prior to the August 20th deadline, President Bush invoked IEEPA authority on August 21, 2001 and has renewed it annually.”

<sup>70</sup> Theodore F. Chupein, “What is the International Traffic in Arms Regulation (ITAR)?” available from <[http://www.amc.army.mil/amc/command\\_counsel/resources/documents/newsletter04-1/encl06.pdf](http://www.amc.army.mil/amc/command_counsel/resources/documents/newsletter04-1/encl06.pdf)>; Internet; accessed 12 November 2004.

<sup>71</sup> Joel Johnson <[joel.johnson@aia-aerospace.org](mailto:joel.johnson@aia-aerospace.org)>, “French Satellite Quote From *DefenseNews*,” electronic mail message to Mark McLean <[mark.mclean@carlisle.army.mil](mailto:mark.mclean@carlisle.army.mil)>, 24 November 2004. In the email, Mr. Johnson, Vice President for International Affairs, explains, “As to the most recent study [the Defense Industrial Base Capabilities Study], I interpret that to say we have finally discovered the obvious – some foreigners actually know more about some things than we do. That should call into question whether we are controlling things in which we are behind, not

ahead. Our biggest frustration with the export control system is not that we have export controls, but rather that we control too much in areas which are inherently commercial or in areas for which there is foreign availability.”

<sup>72</sup> Brooks Tigner, “New EU Law Would Boost Courts’ Say in Arms Deals,” *DefenseNews*, 25 October 2004, p. 50.

<sup>73</sup> Andrew Chuter, “U.K. to Set Industry Strategy in 2005,” *DefenseNews*, 1 November 2004, p. 6.

<sup>74</sup> Bob Munton and Brinley Salzmann, “U.K.’s Growing Controls,” *DefenseNews*, 25 October 2004, p. 92. The authors caution businesses to take heed of the increased restrictions. Additionally, they recommend a multilateral collaborative basis for control versus national solutions.

<sup>75</sup> Department of Defense, *Defense Acquisition Guidebook* (Washington, D.C.: U.S. Department of Defense, 2004), available from <<http://akss.dau.mil/DAG/DoD5000.asp?view=functional>>; Internet; accessed 31 October 2004.

<sup>76</sup> Department of Defense, Under Secretary of Defense for Industrial Policy, *Annual Industrial Capabilities Report to Congress* (Washington, D.C.: Department of Defense, February 2004), 4.

<sup>77</sup> Department of Defense, Office of the Under Secretary of Defense for Industrial Policy, *Foreign Sources of Supply: Assessment of the United States Defense Industrial Base* (Washington, D.C.: November 2004), 19. Also available from <[http://www.acq.osd.mil/ip/docs/812\\_report.pdf](http://www.acq.osd.mil/ip/docs/812_report.pdf)>; Internet; accessed 23 November 2004. One of the exceptions of highest concern is active hyperspectral imagers for monitoring infra-red events from space. The U.S. trails potential adversaries due to foreign technology advancements in civil applications. Other areas of concern that merit careful monitoring include electronically scanned array radars, precision clocks, helmet mounted displays, hypersonic propulsion, plasma thrusters, chemical lasers and a handful of others.

<sup>78</sup> Samuel B. Griffith, *Sun Tzu: The Art of War* (New York: Oxford University Press, 1963), 84.

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